

VCB Series

Dynamic FCU Balancing Control Valves

PRODUCT SPECIFICATION SHEET



APPLICATION

Honeywell VCB series FCU balancing control valve is designed to control the flow of hot and/or chilled water in zoning systems applications. This is a self balanced flow control valve used in 2-way on/off controls for flow rate ranging from 0.28 to 2.3 m³/h.

VCB series combines the dynamic balancing and electric on/off functions in a single valve body. It consists of a VC series actuator, a control valve insert and a constant flow balancing cartridge in a valve assembly.

FEATURES

VCB Series Control Valve

- Combination of dynamic balancing and electric on/off function in one body
- Every loop automatically limited to design flow
- Simplified pipe calculation
- Quick and easy setup
- No balancing work required
- Integrated valve body reduced installation space
- Stainless steel valve stem resists corrosion & long service life
- Twist lock mount for actuator head. Actuator can be installed after plumbing work has been completed to prevent damage
- In this balanced valve design, the control cartridge moves up and down, across water flow. The actuator provides sinusoidal piston travel action for soft shut-off and opening to eliminate water hammer in most applications.

VC series Actuator

- All actuators are interchangeable and suitable for valves 1/2"~1". This provides installation flexibility with minimum inventory requirement.
- Actuator is powered by a unidirectional motor and crank arm mechanism.
- Motor only operates for few seconds each cycle, power consumption is minimal and motor life greatly extended.
- Locking tab secures actuator to valve body. To remove the head, depress the tab and then rotate the actuator by 45°.
- The actuator is constructed for moisture and humidity resistant material.

SPECIFICATIONS

Valve Body Pressure:	Static - 240 psi (16 Bars), Burst - 1500 psi (100 Bars)
Operational ΔP:	Max. 60 psi (4 Bars)
Media temperature:	1° to 95°C (min / max)
Valve Body:	Bronze
Control Insert:	Ryton™ (polyphenylene sulphide), & Noryl™ (polyphenylene oxide); O-ring seals of EPDM rubber; stainless steel stem
Flow Control Precision:	± 5%
Stem Travel:	10mm
Flow Cartridge:	Stainless Steel, flow rate 0.28 ~ 2.3 m ³ /h
Valve End Connection:	BSPP (Internal Thread)
Nominal timing:	Valve opens in 6 secs @60Hz (20% longer @ 50 Hz)
Actuator Voltage:	100-130V 50/60Hz, 220/240V 50/60Hz
Power consumption:	6W Max. Nominal Voltage (during valve position change)
Electrical termination:	With integral 1m lead cable
Operating ambient temperature:	0 to 65°C
Shipping & storage temperature:	-40 to +65°C
Atmosphere:	Non-corrosive, non-explosive
Dimensions:	See Figure (1)

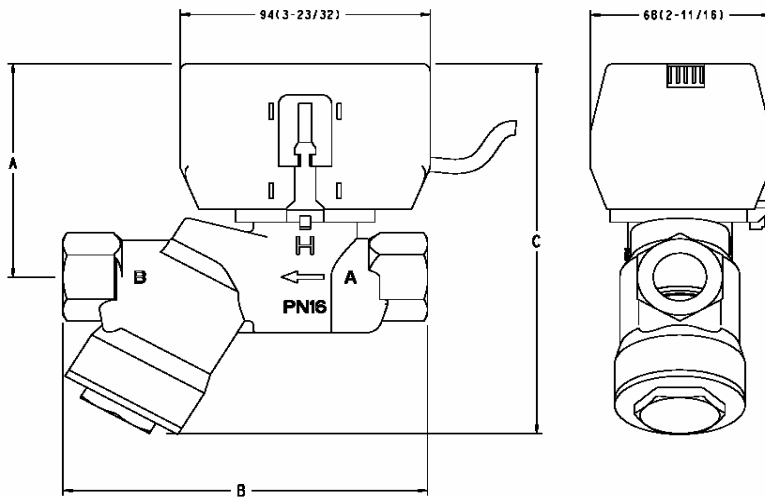


Figure (1) Dimension and Weight

Size	A (mm)	B (mm)	C (mm)	Weight (kg)
DN15	89	137	154	1.15
DN20	89	137	154	1.18
DN25	89	147	154	1.28

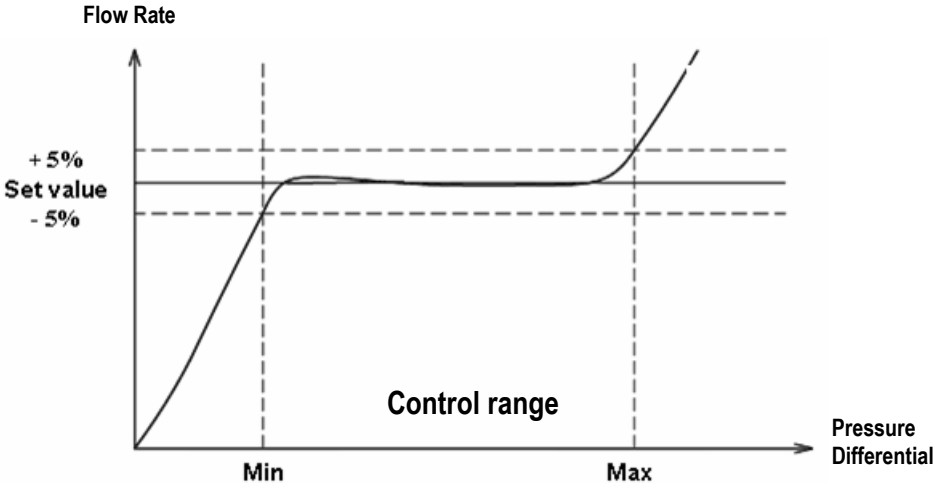
VCB Series Control Valve Selection

C	Size	Flowrate (m3/h)	Differential Pressure (KPa)	OS#	Size	Flowrate (m3/h)	Differential Pressure (KPa)
VCB15BPS01	DN15 BSPP	0.28	22-180	VCB20BPL02	DN20 BSPP	0.76	22-180
VCB15BPS02		0.36		VCB20BPL03		0.86	
VCB15BPS03		0.43		VCB20BPL04		0.94	
VCB15BPS04		0.50		VCB20BPL05		1.12	
VCB15BPS05		0.57		VCB20BPL06		1.33	
VCB15BPL01		0.65		VCB20BPL07		1.51	
VCB15BPL02		0.76		VCB20BPL08		1.69	
VCB15BPL03		0.86		VCB20BPM08		1.76	
VCB15BPL04		0.94		VCB20BPM09		1.98	
VCB15BPL05		1.12		VCB20BPM10		2.20	
VCB20BPS01	DN20 BSPP	0.28	22-180	VCB20BPH10	DN25 BSPP	2.30	40-320
VCB20BPS02		0.36		VCB25BPL08		1.69	22-180
VCB20BPS03		0.43		VCB25BPM08		1.76	30-220
VCB20BPS04		0.50		VCB25BPM09		1.98	
VCB20BPS05		0.57		VCB25BPM10		2.20	
VCB20BPL01		0.65		VCB25BPH10		2.30	40-320

Actuator Selection

Model	Voltage	Control	Electrical Termination	Application
VC4013ZZ00	200-240VAC 50(60)Hz	2 wire +COM SPST output	Integral 1 meter lead wire	2-Pipe/4-Pipe Fan-coil
VC6013ZZ00	200-240VAC 50(60)Hz	3 wire SPDT output	integral 1 meter lead wire	2-Pipe Fan-coil

Figure (2): Flow Rate - Differential Pressure Characteristic Curve



OPERATION

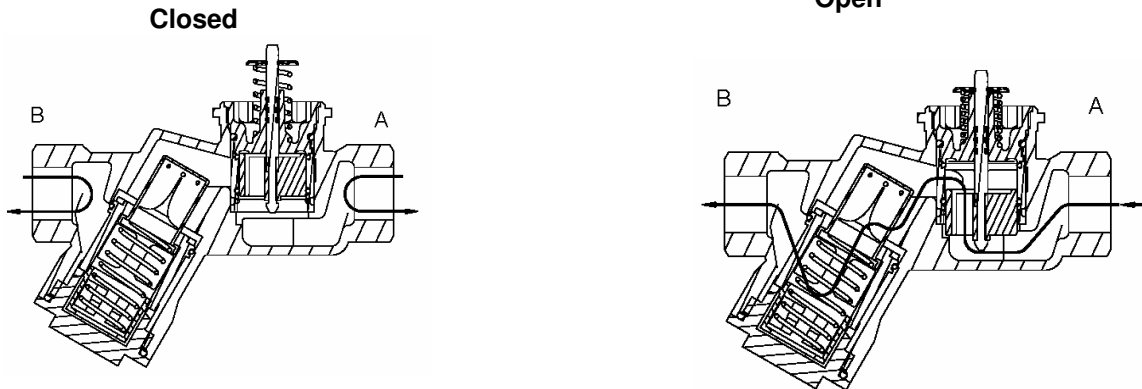


Figure (3): Fluid flow of VCB series FCU balancing valve

Flow: Flow is from A to B.
Valve is closed when the stem is in the up position.

MANUAL OPENER

The manual opener can be manipulated only when in the up position. The motorized valve can be opened by firmly pushing the red manual lever down to midway and in. This holds the valve in the open position, and with auxiliary switch models the N.O. switch is closed. This "manual open" position may be used for filling, venting, or draining the system, or for opening the valve in case of power failure. The valve can be restored manually to the closed position by depressing the red manual lever lightly and then pulling the lever out. The valve and actuator will return to the automatic position when power is restored. Note: If the valve is powered open, it can not be manually closed unless actuator is removed.

Installation

WHEN INSTALLING

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service-person.
4. Always conduct a thorough checkout when installation is completed.
5. While not necessary to remove the actuator from the body, it can be removed for ease of installation. The actuator can be installed in any position to suit the most convenient wiring mode.
6. An extra 25 mm head clearance is required to remove the actuator.

CAUTION:

Disconnect power supply before connecting wiring to prevent electrical shock and equipment damage.

TO INSTALL OR REPLACE ACTUATOR

IMPORTANT

Installation of a new actuator does not require draining the system provided the valve body and valve cartridge assembly remain in the pipeline.

1. Check replacement part number and voltage ratings for match with old device.
2. Disconnect power supply before servicing to avoid electrical shock or equipment damage.
3. Disconnect lead wires to actuator. Where appropriate, label wires for rewiring.
4. The actuator head is automatically latched to the valve. To remove, press up on the latch mechanism located directly below the red manual open lever with thumb. Simultaneously press the actuator down towards the body with moderate hand force and turn the actuator counterclockwise by 1/8 turn (45 degrees). Lift actuator off the valve body.

Note: The actuator can also be installed at right angles to the valve body but in this position the latch mechanism is not engaged.

5. Install the new actuator by reversing the process in (4).
6. Reconnect lead wires.
7. Restore power, and check out operation.

PLUMBING

IMPORTANT:



For trouble-free operation of the product, good installation practice must include initial system flushing, chemical water treatment, and the use of a 50 micron (or finer) system side stream filter(s). Remove all filters before flushing.

Put the VC actuator manual lever in the manual open or the fully open (down) position to allow initial system flushing with the actuator mounted. This may be done without electrical hook-up. Alternatively, reusable flush caps, part # 272866B, may be purchased separately for use in initial flushing of dirty hydronic systems.



Do not use boiler additives, solder flux and wetted materials which are petroleum based or contain mineral oil, hydrocarbons, or ethylene glycol acetate. Compounds which can be used, with minimum 50% water dilution, are diethylene glycol, ethylene glycol, and propylene glycol (antifreeze solutions).

The valve may be installed with flow from A to B. The valve may be plumbed in any angle but preferably not with the actuator below the horizontal level of valve body. Make sure there is enough room around the actuator for servicing or replacement. When used to form part of a central heating system, do not locate it where it will block the system vent, cold feed or any bypass when valve is closed. Mount the valve directly in the tube or pipe. Do not grip actuator while making and tightening up plumbing connections. Either hold valve body in your hand or attach adjustable spanner (38mm or 1-1/2") across the hexagonal or flat faces on the valve body.

If assembly valve train on a bench, take care not to deform body with vice.

Do not place the raised "H" logo between the jaws of the vice. Excess jaw force can deform the body.

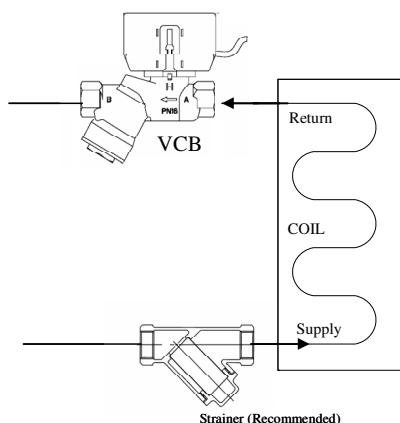


Figure (4): Application

WIRING

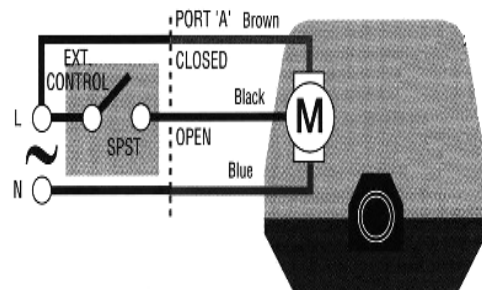


Figure (5): 2 wire + Common version VC Valve actuator With Cable for SPDT controller (Series 40)

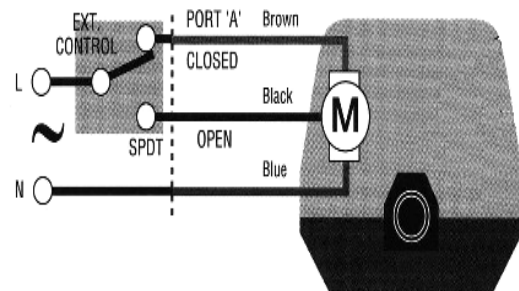
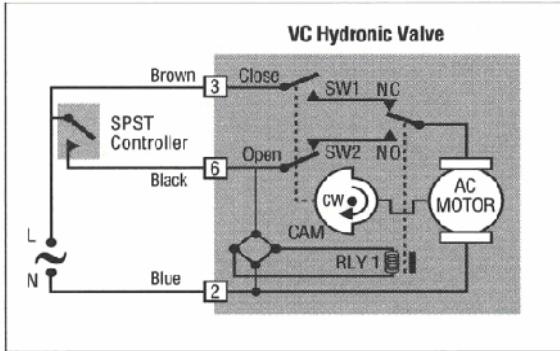


Figure (6): 3 Wire version VC Valve Actuator With Cable for SPST controller (Series 60)

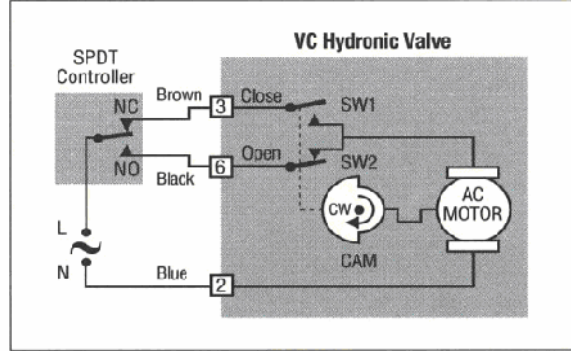
WIRING

Figure (7) Simplified Internal Wiring Schematics

2 Wire + Common Actuator



3 Wire Actuator



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